

# (12) UK Patent Application (19) GB (11) 2 365 054 (13) A

(43) Date of A Publication 13.02.2002

(21) Application No 0017824.4

(22) Date of Filing 21.07.2000

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(51) INT CL<sup>7</sup>

E06B 3/00

(52) UK CL (Edition T)

E1J JGS

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(58) Field of Search

UK CL (Edition S) E1J JGB JGD JGE JGK JGN JGS

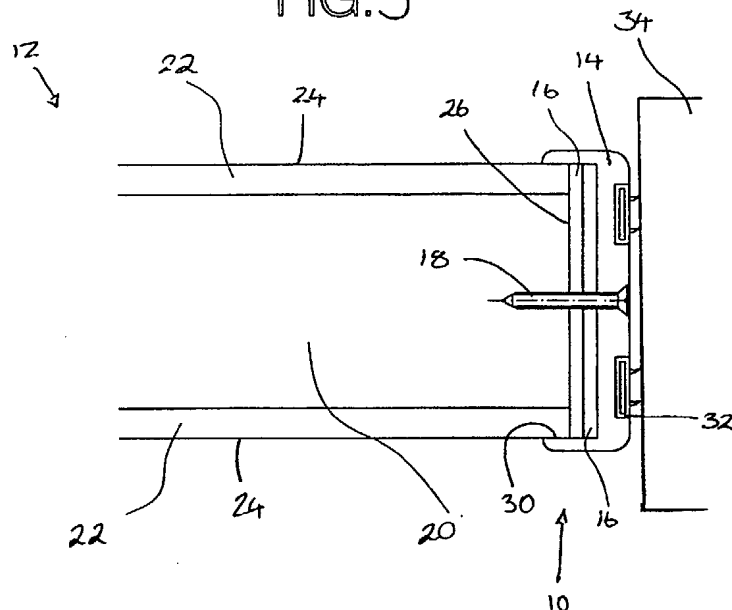
INT CL<sup>7</sup> E06B

(54) Abstract Title

**Adjustable door sizing apparatus**

(57) An adjustable door sizing apparatus 10 for a door 12 comprises at least one first member 14 adapted to be mounted to at least one end surface 26 of a door other than an end hinged to an adjacent frame, an adjusting means 16 for adjusting the position of each first member relative to the corresponding end surface 26 of the door, and a releaseable retaining means 18 for retaining each first member 14 in position. The first member 14 may extend along each edge of the door not hinged to the wall. The first member may be of substantially U-shaped transverse cross section and adapted to receive the corresponding end surface 26 of the door. The apparatus may comprise at least one smoke strip 32 mounted to a first member and in use extending between a first member and an adjacent wall. The adjusting means may also comprise a plurality of separating members located in use between a first member 14 and end surface 26 to maintain a predetermined distance between them. The releaseable retaining means 18 may comprise at least one screw extending in use through a first member, into the end surface. The retaining means may comprise a bolt, engaging a nut recessed into the end surface. The releaseable retaining means 18 may also extend through the adjusting means 16.

FIG.3



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FIG. 1

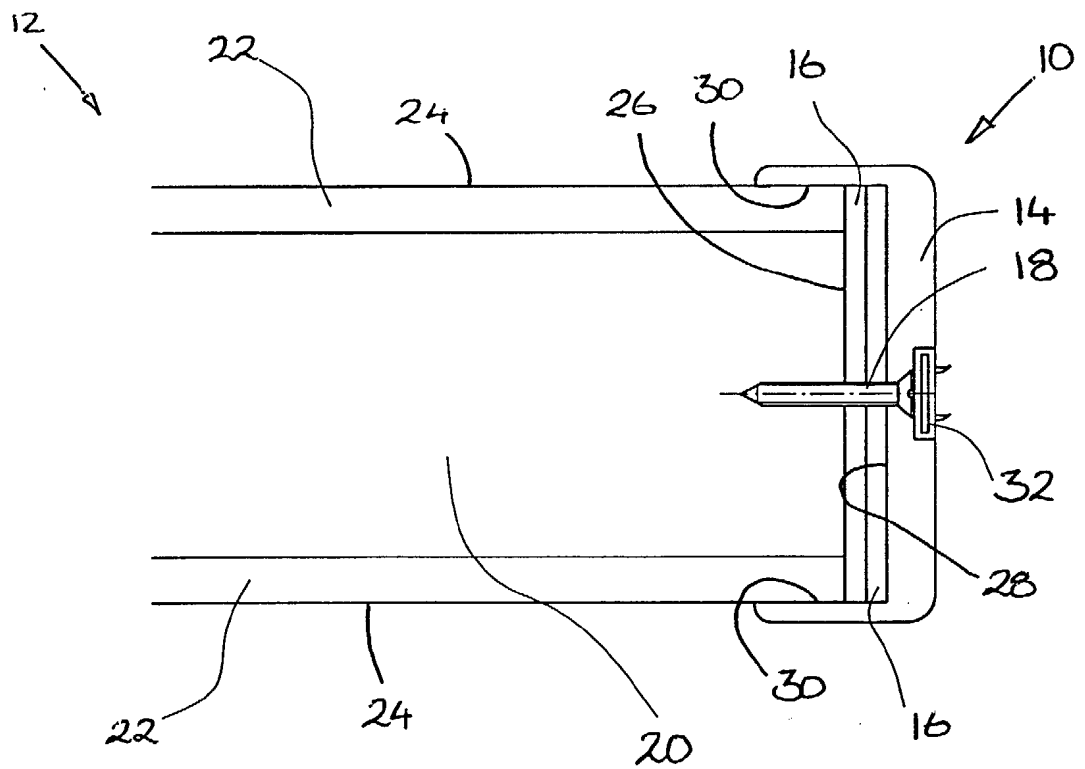


FIG. 2

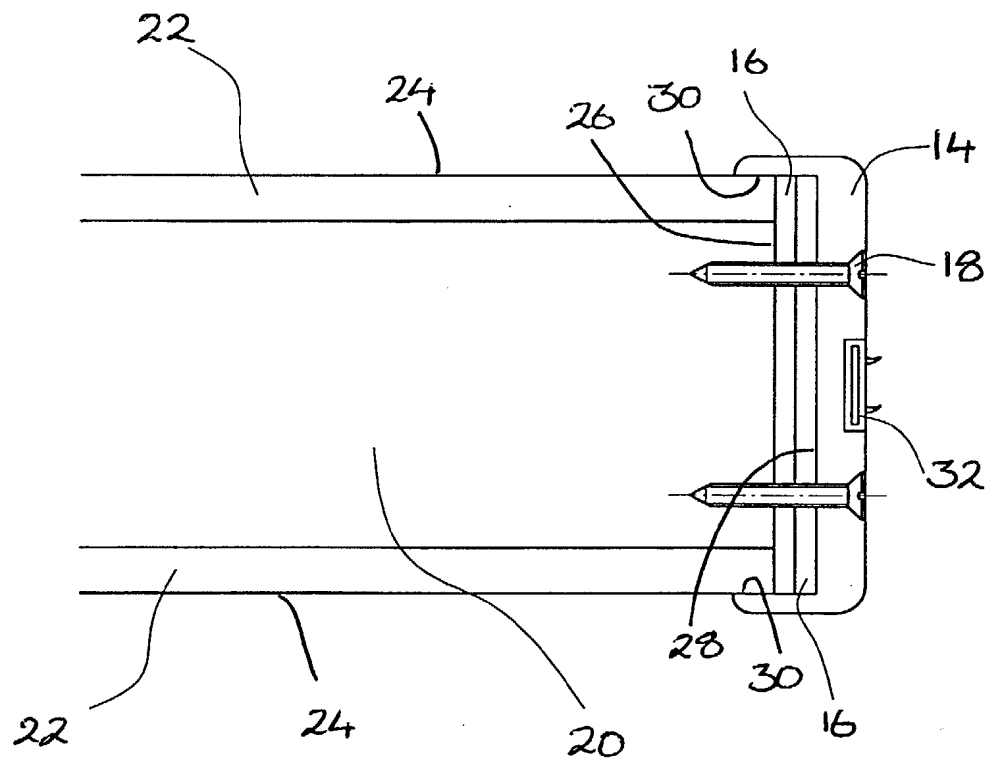


FIG. 3

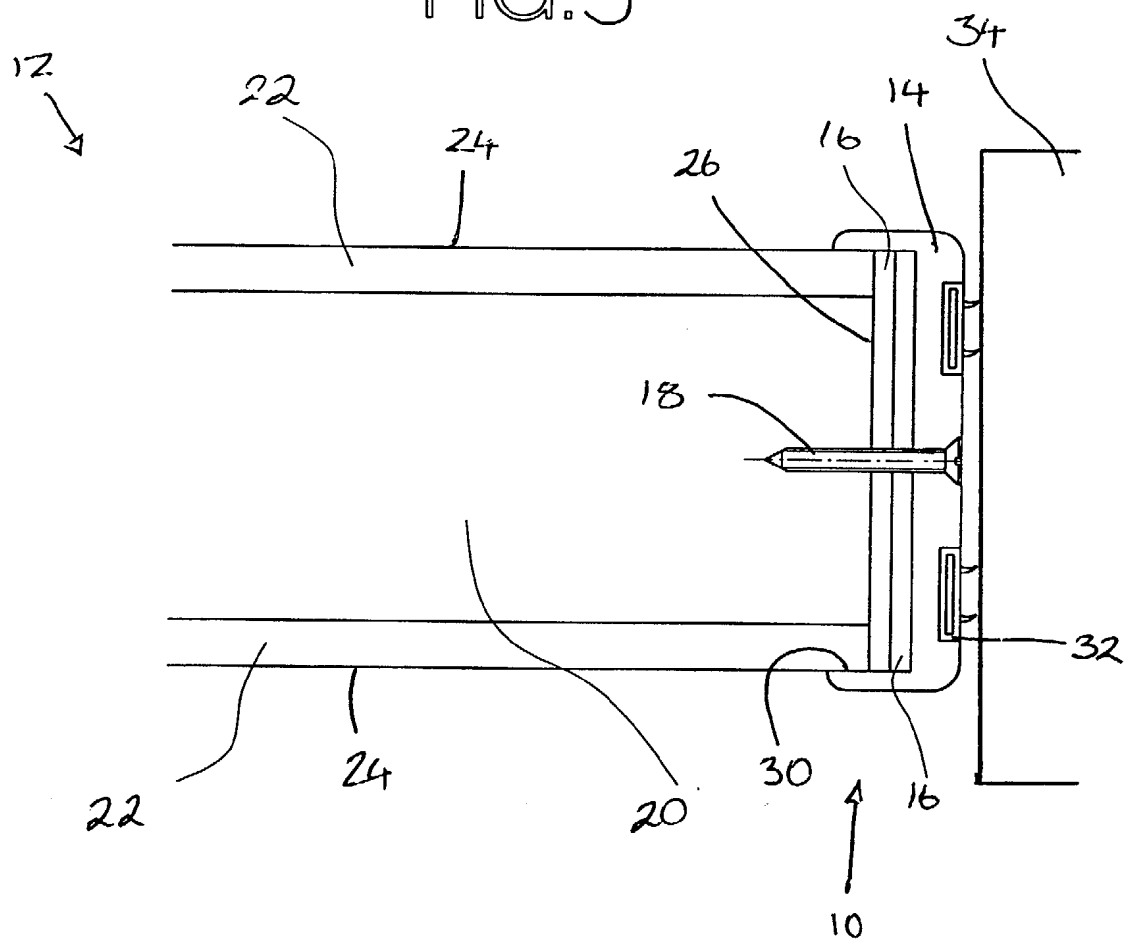


FIG. 4

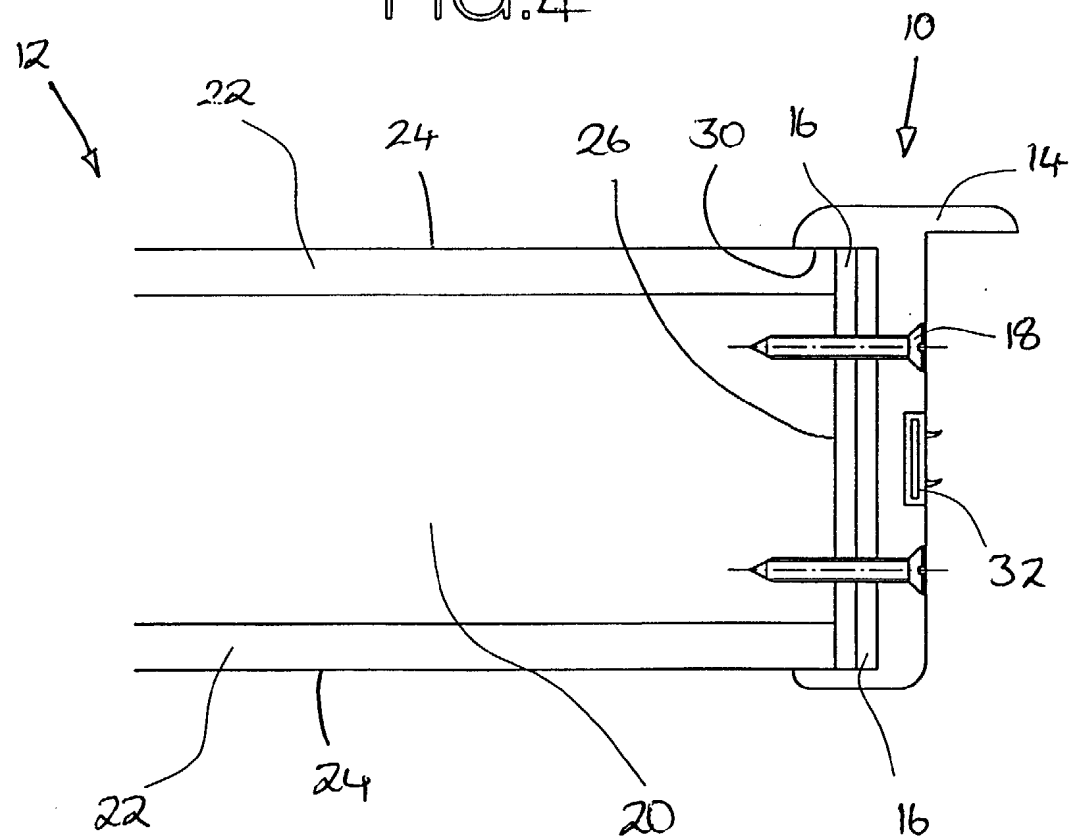


FIG.5

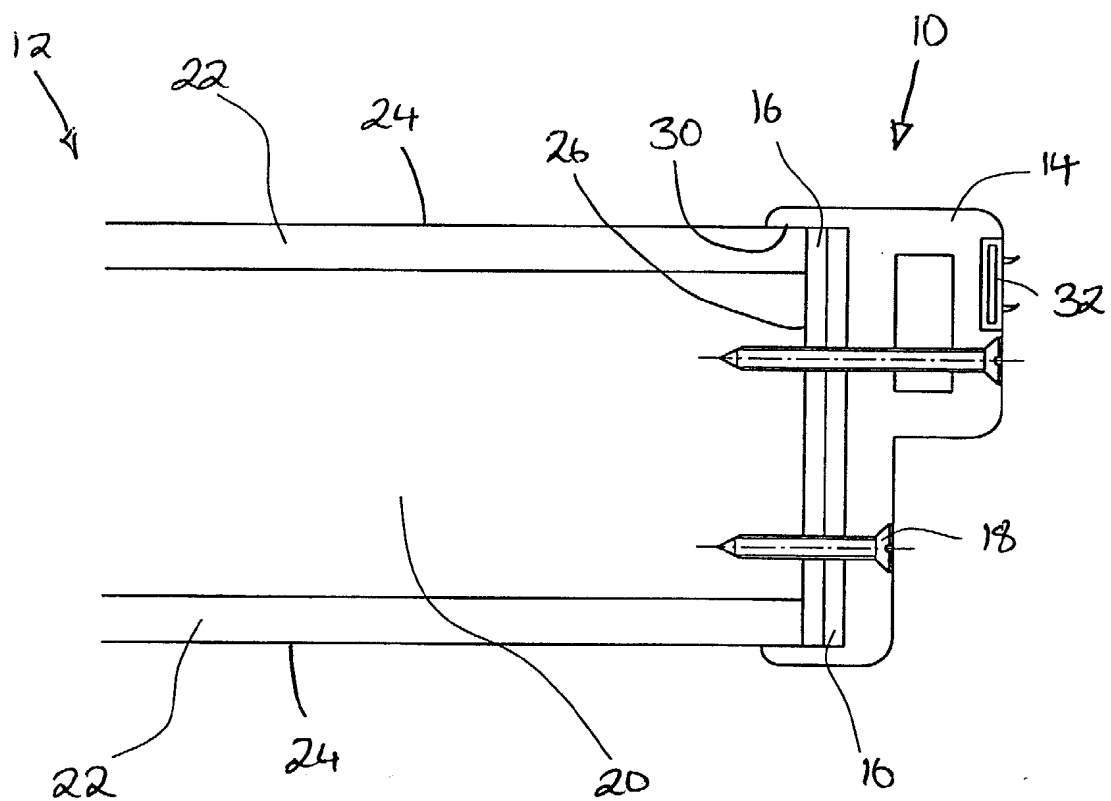
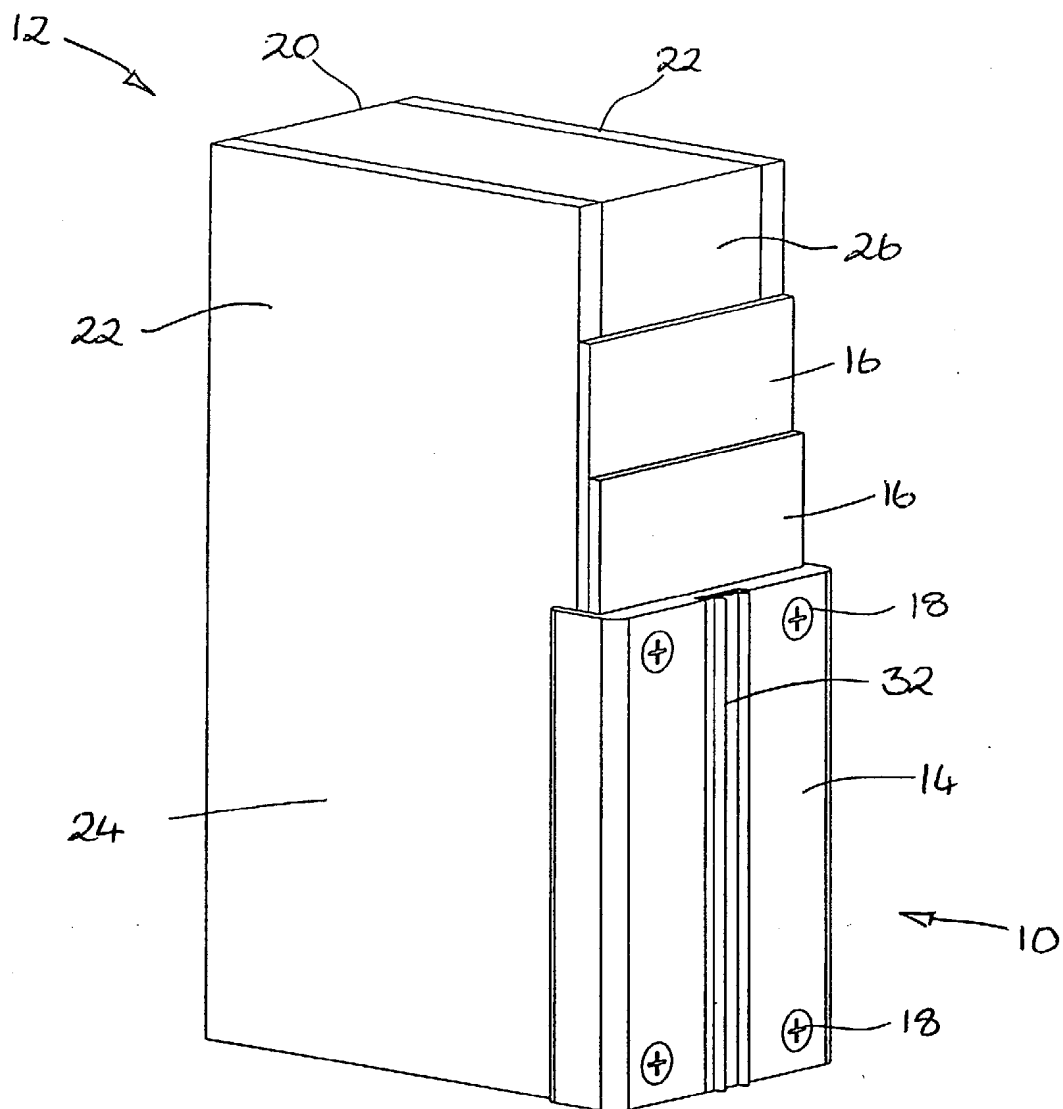


FIG.6



Adjustable Door Sizing Apparatus

The present invention relates to an adjustable door sizing apparatus, and relates particularly, but not exclusively, to an apparatus for adjusting the size of a fire door.

One of the purposes of a fire door is to prevent, in the event of fire, smoke from moving from one room to another. In order to do this the door must fit closely with the surrounding door frame within the wall so that smoke strips, which are generally strips of flexible material which form a seal between the door and the frame, are able to extend completely from the door to the adjacent frame.

When a door is installed, particularly in a building which is being built or extensively renovated and which is therefore unheated when the door is installed, it is common for the door to expand once it is installed, for instance because of dampness in the building, and then subsequently to shrink, for instance when central heating or air conditioning systems are used. As a result, it is difficult to install a correctly fitting door.

When a door expands it is necessary to reduce the size of the door so that it fits correctly within its frame. In the case of a fire door, this is of particular importance since the smoke strips must form a seal between the door and the frame. Adjustment of the dimensions of a door requires the door to be removed from its hinges and for any edges of the door which are too large to be planed to the correct size, and the door re-hung. In the case of a fire door it is necessary to remove the smoke strips from the edges of the door before the door can be planed and the smoke strips re-attached before the door is re-hung, which typically requires two people to carry out the work on the door.



As a result of environmental changes within the building, such as the use of central heating or air conditioning, it is possible that a door and/or frame may shrink. When this occurs the door can become too small for the door frame. This is a particular problem for fire doors where the smoke strip may no longer extend from the door to the frame when the door is closed. As a result the fire door will not comply with the fire regulations and must either be replaced or made bigger so as to fix the door frame correctly.

Preferred embodiments of the present invention seek to overcome the above described disadvantages of the prior art.

According to the present invention there is provided an adjustable door sizing apparatus for a door, the apparatus comprising:-

at least one first member adapted to be mounted to at least one end surface of a door other than an end hinged to an adjacent frame;

adjusting means for adjusting the position of the or each first member relative to the corresponding end surface of the door; and

releaseable retaining means for retaining the or each said first member in position on the door.

By providing a door with at least one member, the position of which can be adjusted relative to the door, the advantage is provided that in the event of expansion or shrinkage of the door the position of the edges of the door can be altered such that it fits correctly within the door frame within the wall. The further advantage is provided that the adjustment that can be made can be easily reversed. Furthermore the adjustment can be made without the removal of the door from the door frame, which further reduces the time taken in adjusting the size of

the door and reduces the likelihood of misalignment of the door when it is re-hung on the frame, as well as only requiring one person to carry out the adjustment.

In a preferred embodiment the or each said a first member in use extends along each edge, which is not hinged to a wall, of a door.

By providing a first member along each of the door's end surfaces which are not hinged to the wall, the advantage is provided that it is possible to fit all of the end surfaces of the door to the door frame.

In another preferred embodiment said first member is of substantially U-shaped transverse cross section and is adapted to receive the corresponding end surface of the door.

By providing a first member having substantially U-shaped cross section located over the end surface of the door with two sides extending over the edge regions of the adjacent surfaces of the door, the advantage is provided that the first member covers the edge of the door and covers the adjusting means, thereby providing an aesthetically pleasing edge to the door. Because the edges of the surround means are aesthetically pleasing, the end surface of the door, which may have to be cut to fit the frame, especially if the door frame is an unusual size or not perfectly square, does not have to be cut perfectly as the edges will be covered by the first member. Thus the carpentry skills of the person fitting the door need not be as high as if the door were planed to fit.

In a preferred embodiment the apparatus further comprises at least one smoke strip mounted to a first member and extending in use between said first member and an adjacent wall to inhibit movement of smoke past the door.

In a preferred embodiment, said adjusting means comprises a plurality of separating members located in use between a said first member and an end surface of the door to maintain a predetermined distance between said first member and the end surface.

By providing a plurality of separating members between a first member and the end surface of the door, the advantage is provided that there is a continuous connection between the end surface of the door and the first member which increases the rigidity of the door, especially along the edge of the door at the connection between the first member and the door. Such a solid edge does not suffer from regions of weakness resulting from a first member held away from the end surface of the door without separating members therebetween. The further advantage is provided that with separating members of known width it is straightforward for a person to determine how many such separating members need to be inserted or removed from between the first members and the end surface of the door in order to provide the correct fit. For example, if two separating members easily fit between the first member and the door frame, then inserting two separating members between the first member and the end surface of the door will cause the first member to move to the correct distance from the door frame.

In a preferred embodiment, said releasable retaining means comprises at least one screw extending in use through a said first member into an end surface of the door.

In a preferred embodiment, said retaining means may comprise at least one bolt extending in use through a said first member and engaging a nut recessed into an end surface of said door.

In a preferred embodiment, said releasable retaining means extends through said adjusting means.

Preferred embodiments of the above invention will now be described, by way of example only and not in any limitative sense, with reference to the accompanying drawings in which:-

Figure 1 is a cross-sectional view of an adjustable door sizing apparatus of a first embodiment of the invention mounted to a door;

Figure 2 is a cross-sectional view, corresponding to Figure 1, of a second embodiment of the present invention;

Figure 3 is a cross-sectional view, corresponding to Figure 1, of a third embodiment of the present invention;

Figure 4 is a cross-sectional view, corresponding to Figure 1, of a fourth embodiment of the present invention;

Figure 5 is a cross-sectional view, corresponding to Figure 1, of a fifth embodiment of the present invention; and

Figure 6 is a perspective view of the apparatus and door of Figure 2.

Referring to figures 1, 2 and 3, an adjustable door sizing apparatus 10 for a door 12 comprises a first member in the form of elongate metal strip 14, adjusting means in the form of one or more inserts 16, and releasable retaining means 18.

The door 12 comprises a door stile 20 and door skins 22. The external surfaces of skins 22 form a pair of surfaces 24 connected by a an end surface 26. First member 14 has internal surfaces 28 and 30 and a smoke strip 32. The smoke strip 32 comprises a double strip of flexible material mounted to the door by means of an intumescent strip adapted to expand in the presence of heat.

When the door 12 is being hung within door frame 34 (shown in Figure 3 only) the door 12 is cut to a size sufficiently small so as to accommodate the first member 14 and inserts 16, between the door 12 and the frame 34. The inserts 16 are placed against the end surface 26 of the door and the first member 14 is placed over inserts 16 so that the internal surfaces 28, 30 engage the end and edge regions of the door respectively. Sufficient inserts 16 are placed between the first member 14 and the end surface 26 of door 12 so that a predetermined space is left between member 14 and door frame 34. In the example shown in Figure 3 this is sufficient to cause smoke strips 32 to contact door frame 34.

Releasable retaining means 18, for example a screw, holds the first member 14 against adjusting means 16 which are in turn held against the door 12. The inserts 16 may extend along the entire length of connecting surface 26 of the door or may alternatively comprise short pieces which are for instance inserted at either end of first member 14.

In the event that the door 12 should shrink and smoke strips 32 do not extend to frame 34, screw 18 may be slackened and one or more additional inserts 16 can be inserted between door 12 and the first member 14.

In the event that the door 12 should expand such that the first member 14 comes into direct contact with frame 34, screw 18 can be slackened and one or more inserts 16 removed before screw 18 is re-tightened.

It will be appreciated by persons skilled in the art that the above embodiment has been described by way of example only and not in any limitative sense, and that various alterations and modifications are possible without departure from the scope of the invention as defined by the appended claims. For example, the adjusting means 16 and releasable retaining means 18 could be combined. For example, if adjusting means 16 is a long

threaded bolt extending through the first member 14 into a threaded receiving means in door 12, and the first member 14 is attached to and held at the head end of the bolt 16 such that the bolt can still turn, the surround means can be adjusted relative to the door by rotation of the head of the bolt. This door edge will however not be as strong as those with inserts acting as the adjusting means 16.

Claims

1 An adjustable door sizing apparatus for a door, the apparatus comprising:-

at least one first member adapted to be mounted to at least one end surface of a door other than an end hinged to an adjacent frame;

adjusting means for adjusting the position of the or each first member relative to the corresponding end surface of the door; and

releaseable retaining means for retaining the or each said first member in position on the door.

2 An apparatus according to claim 1, wherein the or each said a first member in use extends along each edge, which is not hinged to a wall, of a door.

3 An apparatus according to claim 1 or claim 2, wherein said first member is of substantially U-shaped transverse cross section and is adapted to receive the corresponding end surface of the door.

4 An apparatus according to any of the preceding claims, further comprising at least one smoke strip mounted to a first member and extending in use between said first member and an adjacent wall to inhibit movement of smoke past the door.

5 An apparatus according to any one of the preceding claims, wherein said adjusting means comprises a plurality of separating members located in use between a said first member and an end surface of the door to maintain a predetermined distance between said first member and the end surface.

6 An apparatus according to any one of the preceding claims, wherein said releasable retaining means comprises at least one screw extending in use through a said first member into an end surface of the door.

7 An apparatus according to any one of claims 1 to 5, wherein said retaining means comprises at least one bolt extending in use through a said first member and engaging a nut recessed into an end surface of said door.

8 An apparatus according to any one of the preceding claims, wherein said releasable retaining means extends through said adjusting means.

9. An adjustable door sizing apparatus substantially as hereinbefore described with reference to the accompanying drawings.





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Application No: GB 0017824.4  
 Claims searched: 1-9

Examiner: Catherine Allen  
 Date of search: 18 June 2001

## Patents Act 1977 Search Report under Section 17

### Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.S): E1J: JGB, JGD, JGE, JGK, JGN, JGS

Int Cl (Ed.7): E06B

Other: WPI, EPODOC, JAPIO

### Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
X, Y	GB2307502A	DDB ASSOCIATES LTD see whole document	X: 1-3, 6 & 7 Y: 4
Y	GB2287740A	ENVIRONMENTAL SEALS LIMITED see figure 3	4
Y	GB2247709A	ACCENT GROUP LIMITED see figure 5	4
X, Y	US5943824	TATARA see figure 8	X: 1-3 & 6-8 Y: 4
X, Y	US5845439	HENDLEY see whole document	X: 1, 2 & 5-8 Y: 4
X	US5014465	ISHIKAWA ET AL. see figure 4	1-9
X, Y	JP200096966	SHIKOKU CHEM CORP see figures 1, 3	X: 1, 2 & 5-8 Y: 4
X, Y	JP90317333	KOMANI see figure 3	X: 1-3 & 5-8 Y: 4

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.



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X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.